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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/367,797	01/19/2000	ANDREW JOHNSON	A-68362/DJB	4776

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DIGIMARC CORPORATION
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EXAMINER	
KLIMACH, PAULA W	

ART UNIT	PAPER NUMBER
2135	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/367,797	JOHNSON ET AL.	
	Examiner	Art Unit	
	Paula W Klimach	2135	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-14* is/are allowed.

6)☒ Claim(s) *15-24,27, 29-49, and 50-51* is/are rejected.

7)☒ Claim(s) *45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is in response to amendment filed on 08/23/2004. Original application contained Claims 1-51. Applicant amended Claims 1, 15, and 19. The amendment filed on 08/23/2004 have been entered and made of record. Therefore, presently pending claims are 1-51.

Response to Arguments

Applicant's arguments filed 08/23/2004 have been fully. The delay in citation of the newly discovered prior art is regretted.

Claim Rejections - 35 USC § 101

Claim 50-51 is rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. Claim 50 discloses a method of steganographically encoding content. The claim discloses form the data in the watermark takes. The claim does not disclose the method of attaining the watermark.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15-24, 27, 29-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox (5, 915, 027) in view of the article by Cox and Javidi.

In reference to claims 15 and 27, Cox discloses a method for extracting a watermark from watermarked digital media data, including: segmenting the digital media data into data blocks (column 5 line 64 to column 6 line 5).

Although Cox discloses a watermark identifier (Fig. 4), Cox does not expressly disclose applying an orthogonal transform to the modified data block to obtain transform domain data; and extracting identification or authentication data from at least one coefficient of the transform domain data.

However in the article by Cox, a method of extracting the watermark is discloses that applies an orthogonal transform to the modified data block to obtain transform domain data; and extracts identification or authentication data from at least one coefficient of the transform domain data (Fig. 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to user the watermark extraction method as disclosed in the article by Cox in the system of Cox. One of ordinary skill in the art would have been motivated to do this because the extraction can extract a reliable copy of the watermark from imagery that has been significantly degraded (Section 4 paragraph 4 in the article by Cox).

However Cox does not disclose applying a pseudo-random reversible function to a block of the digital media data to obtain a modified data block.

Javidi discloses applying a pseudo-random reversible function to a block of the digital media data to obtain a modified data block (column 7 lines 34-51).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to encrypt the image as disclosed by Javidi in the system of Cox. One of ordinary skill in the art would have been motivated to do this because the two encrypting random phase functions are two independent white sequences uniformly distributed and therefore difficult to decrypt the image and the memory without the knowledge of the phase functions used in the encryption.

In reference to claims 16, wherein the pseudo-random function applied to the data block is a keyed function controlled by a cryptographic key.

Cox does not disclose applying a pseudo-random reversible function to a block of the digital media data to obtain a modified data block.

Javidi discloses applying different keys to decrypt different memory data (column 1 lines 52-55).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to control the cryptographic function using a cryptographic key as in Javidi in the system of Cox. One of ordinary skill in the art would have been motivated to do this because only the keys need to be distributed securely.

In reference to claim 17, wherein the pseudo-random function applied to the data block has a property of flattening the power spectral intensity of the data block.

Cox does not disclose applying a pseudo-random reversible function to a block of the digital media data to obtain a modified data block.

Javidi discloses applying an encryption process on an image wherein the encryption of the image creates white noise (flattening the power spectral intensity of the data block) if the two encrypting random phase functions are two independent white sequences (column 1 lines 35-40).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a random functions applied to the data block has a property of flattening the power spectral intensity of the data block. One of ordinary skill in the art would have been motivated to do this because this makes it very difficult to decrypt the image (column 1 lines 35-40).

In reference to claim 18, wherein application of the pseudo-random function and application of the orthogonal transform as carried out in the same operation.

Cox does not disclose applying a pseudo-random reversible function to a block of the digital media data to obtain a modified data block.

Javidi discloses applying an encryption process on an image wherein the encryption of the image creates white noise (flattening the power spectral intensity of the data block) if the two encrypting random phase functions are two independent white sequences (column 1 lines 35-40).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to perform the encryption process and the orthogonal transform in the same operation. One of ordinary skill in the art would have been motivated to do this because the operation is an extraction of the identification from the watermarked data and the encrypted data is input into the extraction process of Cox.

In reference to claims 19 and 32, Cox discloses a system wherein the act of extracting includes selecting at least one transform domain data coefficient from which to extract identification or authentication data according to a keyed pseudo-random operation (Fig 2).

In reference to claims 20, 30, 35-36, and 39-40 Cox discloses a system wherein the digital media data comprises video data (column 4 lines 20-25).

In reference to claims 21 and 31, Cox discloses a system wherein the digital media data comprises audio data (column 2 lines 30-36).

In reference to claims 22 and 29, Cox discloses a system wherein the identification or authentication data is extracted from the digital media data in real time (column 2 lines 44-50).

In reference to claim 23, wherein the orthogonal the transform is a Walsh Hadamard transform.

Although Cox discloses a DCT transform, Cox does not disclose the use of the Walsh Hadamard transform.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the Walsh Hadamard transform instead of the DCT transform as disclosed in Cox. One of ordinary skill in the art would have been motivated to do this because Walsh Hadamard is often used for watermarking systems either system would be used to insert the watermark and spread it along the spectrum.

In reference to claim 24, wherein the orthogonal transform is selected from a discrete cosine transform, a discrete sine transform and a fast Fourier transform.

However in the article by Cox, a method of extracting the watermark is discloses that applies an orthogonal transform to the modified data block to obtain transform domain data; and

extracts identification or authentication data from at least one coefficient of the transform domain data (Fig. 2). The system of Cox uses the discrete sine transform.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to user the watermark extraction method as disclosed in the article by Cox in the system of Cox. One of ordinary skill in the art would have been motivated to do this because the extraction can extract a reliable copy of the watermark from imagery that has been significantly degraded (Section 4 paragraph 4 in the article by Cox).

In reference to claims 33 and 37, system comprising a media data buffer for temporarily storing media data received from a data source; a real time processor coupled to receive media data from the media data buffer (column 2 lines 45-53).

Although Cox discloses a watermark identifier (Fig. 4), Cox does not expressly disclose applying an orthogonal transform to the modified data block to obtain transform domain data; and extracting identification or authentication data from at least one coefficient of the transform domain data.

However in the article by Cox, a method of extracting the watermark is discloses that applies an orthogonal transform to the modified data block to obtain transform domain data; and extracts identification or authentication data from at least one coefficient of the transform domain data (Fig. 2). Cox discloses further a comparison processor for comparing extracted identification or authentication data with known identification or authentication data (Fig. 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to user the watermark extraction method as disclosed in the article by Cox in the system of Cox. One of ordinary skill in the art would have been motivated to do this because the

extraction can extract a reliable copy of the watermark from imagery that has been significantly degraded (Section 4 paragraph 4 in the article by Cox).

In reference to claims 34 and 38 includes an analogue-to-digital converter for convening media data into a digital form before processing by the real time processor.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the analogue data into the digital data. One of ordinary skill in the art would have been motivated to do this because the input data in the system of Cox is digital data (column 1 lines 21-25).

Claims 26, 41-42, 46-48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Rhoads (5,822,436).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this

rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

In reference to claim 41, Cox discloses the digital watermark representing a plural-bit payload (watermark signal Fig. 2) and the method including segmenting the content data into portions and processing the portions to encode the digital watermark (Part 24 Fig 2).

Although Cox discloses inserting a watermark (part 25 Fig. 2) after segmentation of the data, Cox does not subtract from each of the samples a non-zero value.

However, Rhoads discloses a system for inserting a watermark wherein an N-bit identification word (watermark) is inserted into the original digital image (column 7 lines 60-67). The system disclosed by Rhoads subtracts the individual embedded code signal to achieve the insertion of a 0, of the watermark, into the original digital image (column 12 lines 5-15).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to subtract a non-zero value from the digital image as disclosed in Rhoads in the system of Cox. One of ordinary skill in the art would have been motivated to do this because it would increase the energy wise separation of 0 and 1 (column 12 lines 11-15).

In reference to claim 47, Cox discloses the digital watermark representing a plural-bit payload (watermark signal Fig. 4) and the method including segmenting the content data into portions and processing the portions to encode the digital watermark (Part 40 Fig 4).

Although Cox discloses extracting a watermark (Fig. 4) after segmentation of the data, Cox does not subtract from each of the samples a non-zero value.

However, Rhoads discloses a system for inserting a watermark wherein an N-bit identification word (watermark) is extracted from the watermarked data without the use of the original (column 19 lines 30-44). The system disclosed by Rhoads subtracts the individual embedded code signal to achieve the insertion of a 0, of the watermark, into the original digital image (column 12 lines 5-15).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to subtract a non-zero value from the digital image as disclosed in Rhoads in the system of Cox. One of ordinary skill in the art would have been motivated to do this because the method uses the decrease of entropy to determine whether the inserted bit of the code word is a zero or a 1 because noise it typically random therefore adding a random signal or subtracting a random signal reduces the entropy is an anomaly.

In reference to claims 26, 42 and 48, in which the method further includes determining an average value of samples within a portion, and subtracting said average value from each of the samples included in said portion.

Although Cox discloses inserting a watermark (part 25 Fig. 2) after segmentation of the data, Cox does not subtract from each of the samples a non-zero value.

Rhoads discloses calculating the average value of samples within a portion (column 30 lines 20-45). Rhoads also discloses subtracting a non-zero value from the data (column 12 lines 5-15).

Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to subtract the average value from each of the samples. One of ordinary skill in the art would have been motivated to do this because the average value would produce a

value that is particular to the data and embedded code signals that carry the bits of information of the identification signal should be unique to each and every encoded signal.

In reference to claim 46, Cox discloses a system wherein the data is transformed into an orthogonal domain, and thereafter changing the transformed data in accordance with the watermark payload (Figure 1).

In reference to claim 49, Cox discloses a method comprising providing content data, the content data representing image or video information and comprising plural samples, each having a value (data to be watermarked Fig. 1); segmenting the content data into blocks (part 24 Fig. 2); transforming the segmented content data into another domain (part 13 Fig. 1); inverse-transforming the processed content data back into an original domain (part 17 Fig. 1).

Although Cox discloses providing the watermark signal (Fig. 1) Cox does not disclose providing data corresponding to a logo graphic (Rhoads column 33 lines 30-45); processing the transformed content data in accordance with the data corresponding to the logo graphic (column 38 lines 46-60).

Rhoads discloses providing data corresponding to a logo graphic (Rhoads column 33 lines 30-45); processing the transformed content data in accordance with the data corresponding to the logo graphic (column 38 lines 46-60).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to provide a logo as a watermark as in Rhoads in the system of Cox. One of ordinary skill in the art would have been motivated to do this because the stored logo could include an identification word therefore when a small change to the image would be a huge visual change in the output.

Claims 25 and 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox and Javidi as applied to claim 15 above, and further in view of Rhoads.

In reference to claim 25 and 28, Cox does not disclose the pseudo-random reversible function is a permutation of the data block based on a keyed pseudo-random number generator.

Rhoads discloses encrypting the input data based on a keyed pseudo-random number generator (column 34 lines 64-60).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to encrypt the input data based on a keyed pseudo-random number generator as in Rhoads in the encryption system of Javidi. One of ordinary skill in the art would have been motivated to do this because small changes in the input will create huge visual changes in the output.

Claims 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Powell et al.(5,721,788).

In reference to claim 44, Cox discloses a system wherein the content data represents visual data information and comprises a plural samples, each having a value, the digital watermark representing a plural-bit payload, the method including segmenting the content data into portions and processing same to encode the digital watermark therein (Fig. 2).

Although Cox discloses inserting the watermark into the image data (Fig. 2) and segmentation wherein the portion has an order, Cox does not disclose scrambling the order as part of the process.

Powell discloses a system wherein as part of the process of inserting a watermark, the pixel near the point where the watermark is to be inserted are repositioned (scrambling requires changing the position or repositioning; column 6 lines 11-17).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to reposition the data as in Powell wherein repositioning the blocks of data of Cox include the segmented data. One of ordinary skill in the art would have been motivated to do this because the points selected by the user will be then be aligned as in the original image.

In references to claim 43, wherein the samples in each portion have an order, and the method includes scrambling said order as part of said processing.

Although Cox discloses inserting the watermark into the image data (Fig. 2) and segmentation wherein the portion has an order, Cox does not disclose scrambling the order as part of the process.

Powell discloses a system wherein as part of the process of inserting a watermark, the pixels near the point where the watermark is to be inserted are repositioned (scrambling requires changing the position or repositioning; column 6 lines 11-17).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to reposition the data as in Powell wherein repositioning the blocks of data of Cox include the segmented data. One of ordinary skill in the art would have been motivated to do this because the points selected by the user will be then be aligned as in the original image.

Allowable Subject Matter

Claims 1-14 and 50 allowed. Claims 1-14 are allowable because although Cox discloses a system in which the digital image is segmented, and Rhoads and Javidi disclose systems for encrypting the digital data, Cox, Rhoads, and Javidi do not disclose applying the inverse pseudo random reversible function after the inverse transform.

Claim 50 is allowable because the claim refers to assessing the coefficients then changing the coefficient value or leaving the coefficient value unchanged.

Claim 45 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paula W Klimach whose telephone number is (571) 272-3854. The examiner can normally be reached on Mon to Thr 9:30 a.m to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on (571) 272-3859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PWK
Monday, January 24, 2005